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MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

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Dr. LEE, President, in the Chair.

Rev. F. Howlett, Hurst Green;
Edmund Wheeler, Esq., 11 William Street, Upper Holloway;
Capt. H. C. Johnstone, 5th Bengal European Regiment;
Rev. M. A. Smelt, Heath Lodge, Petersfield; and
Andrew Yeates, Esq., 12 Brighton Place, New Kent Road,

were balloted for and duly elected Fellows of the Society.

Note on Prof. Wolf's latest Results on Solar Spots.

By Joseph Baxendell, Esq.

In the "Abstract of his latest Results" (*Monthly Notice* for January 1861), Prof. Wolf announces the law that "greater activity on the Sun goes with shorter periods, and less with long periods;" but with reference to this law, it may be remarked, that although the numbers given by Prof. Wolf indicate a higher range of activity in short than in long periods, they also show that the total amount of action from one minimum to another is not materially influenced by the length of the period. Thus five periods, averaging 9·98 years each, give the mean value of the total amount of action = 449·2; whilst four periods, averaging 12·65 years each, give the mean value = 438·0. The near agreement of these two numbers for periods differing so considerably in length shows that the total amount of action cannot be regarded as being dependent to any great extent upon the length of the period; and it appears, therefore, that the higher range of activity in

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short periods is, in fact, due to this near approach to equality in the amount of total action in periods of different lengths. There is, however, a remarkable relation indicated by Prof. Wolf's results which, though not noticed by him, is, perhaps, hardly less important and instructive than the law which he has announced.

If we denote by R the ratio of the intervals from minimum to maximum, and from maximum to minimum, we find that

Five periods, having a mean value of 12·36 years, give $R = \frac{5{\cdot}12}{7{\cdot}24} = 0{\cdot}707$

Five periods, mean value 9·98 years ... ... $R = \frac{4{\cdot}54}{5{\cdot}44} = 0{\cdot}834$

Five periods, having a mean maximum activity of 96·12, give ... ... $R = \frac{3{\cdot}78}{7{\cdot}10} = 0{\cdot}532$

Five periods, having a mean maximum activity of 62·44, give ... ... $R = \frac{5{\cdot}88}{5{\cdot}58} = 1{\cdot}053$

Five periods, having a mean total amount of action = 544·38, give ... ... $R = \frac{3{\cdot}78}{7{\cdot}10} = 0{\cdot}532$

Four periods, having a mean total amount of action = 319·12, give ... ... $R = \frac{5{\cdot}97}{5{\cdot}55} = 1{\cdot}075$

The mean value of R from all the periods in Prof. Wolf's list is ... ... $R = \frac{4{\cdot}83}{6{\cdot}34} = 0{\cdot}761$

It appears, therefore, that the value of R is least in long periods and periods of great activity, and greatest in short periods and periods of diminished activity. Variations in the amount or in the maximum intensity of action, have, however, greater influence than changes in the length of the period.

As most of the variable stars have very unequal rates of increase and decrease of brightness, and as the ratio of these rates is also found to be affected by changes in the length of the period and in the range of variation of brightness, Prof. Wolf's results for the Sun give additional importance to the view taken by some astronomers, that the solar spots and the phenomena of the variable stars are produced by similar agencies.

Manchester, Feb. 20, 1861.

On the Persistency during three days of two light Patches on a Solar Spot. By W. R. Birt, Esq.

On the 9th of July, 1860, between 3^h 30^m and 5^h G.M.T., I observed and figured an interesting solar spot on the southern

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